

REMARKS

The Office Action dated October 19, 2005, has been received and reviewed.

Claims 1-14 are currently pending and under consideration in the above-referenced application. Each of claims 1-14 stands rejected.

Reconsideration of the above-referenced application is respectfully requested.

Supplemental Information Disclosure Statement

Please note that Supplemental Information Disclosure Statements were filed in the above-referenced application on July 26, 2005, October 19, 2005, and October 20, 2005, but that the undersigned attorney has not yet received any indication that the references cited in the Supplemental Information Disclosure Statements have been considered in the above-referenced application. It is respectfully requested that the references cited in the Supplemental Information Disclosure Statements of July 26, 2005, October 19, 2005, and October 20, 2005, be considered and made of record in the above-referenced application and that initialed copies of the Forms PTO/SB/08A that accompanied these Supplemental Information Disclosure Statements be returned to the undersigned attorney as evidence of such consideration.

Obviousness-Type Double Patenting Rejection

Claims 1-14 stand rejected under the judicially created doctrine of obviousness-type double patenting.

An obviousness-type double patenting rejection is appropriate where the subject matter recited in a claim is merely an obvious variation of the invention recited in a claim of an issued or patent or pending patent application. M.P.E.P. § 804.

A double patenting rejection of the obviousness-type is 'analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103' except that the patent principally underlying the double patenting rejection is not considered prior art. *In re Braithwaite*, 379 F.2d 594, 154 USPQ 29 (CCPA 1967). Therefore, any analysis employed in an obviousness-type double patenting rejection parallels the guidelines for analysis of a 35 U.S.C. 103 obviousness determination. *In re Braat*, 937 F.2d

589, 19 USPQ2d 1289 (Fed. Cir. 1991); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). M.P.E.P. § 804.

Claims 1-14 stand rejected under the judicially created doctrine of obviousness-type double patenting for reciting subject matter that is purportedly unpatentable over the subject matter recited in claims 1-21 of U.S. Patent 6,899,607 to Brown (hereinafter, “Brown”), in view of teachings from U.S. Patent 6,594,542 to Williams (hereinafter “Williams”).

Claims 1-14 have been rejected under the judicially created doctrine of obviousness-type double patenting for reciting subject matter that is allegedly unpatentable over the subject matter to which claims 1-32 of copending U.S. Patent Application 11/068,666 (hereinafter “the ‘666 Application”) are directed.

Claims 1-14 are also rejected under the judicially created doctrine of obviousness-type double patenting for being drawn to subject matter that is assertedly unpatentable over the subject matter to which claims 1-24 of copending U.S. Patent Application 11/128,144 (hereinafter “the ‘144 Application”) are drawn.

Notably, the above-referenced application and U.S. Application Serial No. 10/715,248, from which Brown issued, are both divisionals of U.S. Application Serial No. 09/912,982, filed July 25, 2001 (hereinafter “the parent application). In addition, the ‘666 Application is a continuation of the parent application and includes claims that are directed to the same subject matter as the parent application, while the ‘144 Application is a continuation of U.S. Application Serial No. 10/715,248 (hereinafter “the ‘248 Application”), filed November 17, 2003, another divisional of the parent application, and includes claims that are directed to the same subject matter as the ‘248 Application. The above-referenced application, the application from which Brown issued, and the ‘248 Application were filed following an April 2, 2004, Restriction Requirement in the parent application. By virtue of that Restriction Requirement, the Office indicated that the subject matter recited in the above-referenced application is independent and *patentably distinct from* the subject matter recited in the claims of Brown, the parent application and the ‘666 Application, the ‘144 and ‘248 Applications. See M.P.E.P. § 802.01.

As the Office has already indicated that the subject matter recited in claims 1-14 of the above-referenced application is independent and *patentably distinct from* the subject matter

recited in the claims of Brown, the claims of the parent application and the '666 Application, and the claims of the '144 and '248 Applications, the Office cannot rely upon the claims of Brown, the '666 Application, or the '144 Application in its obviousness-type double patenting rejection of claims 1-14.

Accordingly, the obviousness-type double patenting rejection of claims 1-14 should be withdrawn.

Rejections under 35 U.S.C. § 103(a)

Claims 1-14 stand rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Sommer in View of Williams

Claims 1-14 have been rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over the subject matter taught in U.S. Patent 6,561,871 to Sommer (hereinafter "Sommer"), in view of teachings from Williams.

It is respectfully submitted that Sommer in view of Williams does not teach or suggest all the claim limitations set forth in independent claim 1: "...polishing a first semiconductor device structure; analyzing a topography of an active surface of the first semiconductor device structure; generating a force gradient based on the analyzing; applying the force gradient to a backside of at least one second semiconductor device structure; and polishing the at least second semiconductor device structure with the force gradient applied to the backside thereof"

The device disclosed in Sommer is incapable of “applying the force gradient to a backside of at least one second semiconductor device structure...” (Claim 1, line 6). The carrier device disclosed in Sommer consists of a “ring assembly which functions to retain the substrate (semiconductor device structure) in juxtaposition with the platen surface during polishing. Col. 13, lines 38-40. The semi-rigid platen plate engages the backside of the semiconductor device structure. The force applied by the platen plate is varied by pressurizing six cavities 430a, which forces the ring assembly and semiconductor in the Z-direction and draws magnets 420, 422, 424, and 426, which are arranged around at perimeter of the carrier, away from a ferromagnetic polishing plate 406, reducing the magnetic force in the Z-direction. Col. 12, lines 23-68.

Sommer lacks any teaching or suggestion with respect to analyzing a topography of an active surface of a first semiconductor device structure, of generating a force gradient based on analysis of the topography of the active surface of the first semiconductor device structure, of applying the force gradient to the back side of at least one second semiconductor device structure, and of polishing the at least one second semiconductor device structure with the force gradient applied.

The measurements disclosed in Williams is thickness as clearly expressed in the specification, and claims. *See* flow chart presented as Fig. 1, col. 6, lines 17-58, and claim 1. Specifically, Williams teaches a method that includes, “...measuring a first thickness of a first substrate (semiconductor device structure) prior to polishing; polishing the first substrate (semiconductor device structure) for a predetermined time; measuring a second thickness of the first substrate (semiconductor device structure) after polishing...” Williams, claim 1. A measurement of the thickness of a substrate is not a topographical analysis of a surface of the substrate.

Williams also lacks any teaching or suggestion of analyzing a topography of a semiconductor device structure, of generating a force gradient based on analysis of the topography of the active surface of the first semiconductor device structure, of applying the force gradient to the back side of at least one second semiconductor device structure, and of polishing the at least one second semiconductor device structure with the force gradient applied.

As Sommer and Williams, taken either separately or together, do not teach or suggest several elements of independent claim 1, it is respectfully submitted that the teachings of these references do not support a *prima facie* case of obviousness against independent claim 1. The subject matter to which independent claim 1 is directed is, therefore, allowable under 35 U.S.C. § 103(a) over the subject matter taught in Sommer and Williams.

Each of claims 2-14 is allowable, among other reasons, for depending directly or indirectly from claim 1, which is allowable.

Therefore, withdrawal of the 35 U.S.C. § 103(a) rejections of claims 1-14 over Sommer in view of Williams is respectfully requested.

Chen in View of Williams

Claims 1-14 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over that taught in U.S. Patent 6,436,828 to Chen (hereinafter “Chen”), in view of teachings from Williams.

It is respectfully submitted that Chen in view of Williams does not teach or suggest all the claim limitations set forth in independent claim 1, “...polishing a first semiconductor device structure; analyzing a topography of an active surface of the first semiconductor device structure; generating a force gradient based on the analyzing; applying the force gradient to a backside of at least one second semiconductor device structure; and polishing the at least second semiconductor device structure with the force gradient applied to the backside thereof”

The apparatus of Chen includes a carrier head 100 with a housing 102 and a flexible membrane 104 secured to the housing 102, as well as a plurality of coils...” Col. 4, lines 27-29. The membrane 104 is made from a flexible and elastic material, such as silicone, and includes magnetically sensitive particles distributed uniformly therethrough. Col. 4, lines 45-48. In addition, the apparatus of Chen includes a pressurizable loading chamber 120 behind the membrane 104 to apply a downward pressure to the membrane 104 and, thus, to a substrate carried by the carrier head 100. Col. 4, lines 61-67.

Initial downward pressure or force in the Z-direction is applied by pressurizing the loading chamber 120. Since the membrane 104 is elastic, substantially equal amounts of

pressure are applied by the membrane 104 to all areas of the surface of a substrate carried by the carrier head 100. The force in the Z-direction is then varied by energizing the magnetic coils in the housing above the flexible membrane, canceling part of the downward force applied by the pressure in the load chamber. Col. 6, lines 32-41. The magnetic coils are annular, as shown in FIG. 3, and, as such, will only generally affect an inner, a center, and an outer region of the membrane 104, and not finite areas on the membrane 104. Moreover the since the membrane 104 is secured to the housing 102, the magnetic force must overcome both the pressure in the load chamber 120 and the sheer of membrane 104 itself before any reduction of force to the outside region of the substrate could be accomplished. This effect is described in reference to FIG. 4, were the change in removal rate is greatest near the "wafer center," with no change in removal rate near the edge.

The teachings of Williams have been summarized above.

Neither Chen nor Williams teaches or suggests analyzing the topography of the active surface of a semiconductor device structure, let alone generating a force gradient based on such an analysis, applying the force gradient to a back side of at least one second semiconductor device structure, or polishing the at least one second semiconductor device structure while the force gradient is being applied.

As such, a *prima facie* case of obviousness has not been established against independent claim 1. Therefore, under 35 U.S.C. § 103(a), the subject matter recited in independent claim 1 is allowable over the subject matter taught in Chen and Williams.

Claims 2-14 are each allowable, among other reasons, for depending directly or indirectly from claim 1, which is allowable.

Withdrawal of the 35 U.S.C. § 103(a) rejections of claims 1-14 over Chen in view of Williams is respectfully requested.

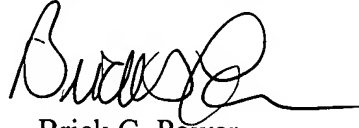
CONCLUSION

It is respectfully submitted that each of claims 1-14 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of

Serial No. 10/715,264

the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brick G. Power", with a long horizontal flourish extending to the right.

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